

# The Action-Theoretical Approach in Educational Psychology

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# THE ACTION-THEORETICAL APPROACH IN EDUCATIONAL PSYCHOLOGY

## Abstract

A new impetus to the study of cognitive development and learning emerged recently, characterized by an orientation toward the ideas of Vygotsky and his successors. Central in the Soviet contribution to educational psychology is the action theoretical approach, with mental action as a key concept. As background for the Vygotskian ideas, we describe the only philosophical principles allowed in the Soviet Union, the accompanying extremely optimistic portrayal of mankind, and the resulting rather negative impact on research activities. This optimistic view, which goes back to Lamarck, and the overriding importance of teaching have a great attraction for educational psychologists and educators. Vygotsky's sociohistorical theory of higher mental functions shows the marks of Marxism Leninism on the one hand, and the influence of Haeckel's recapitulation theory on the other. We demonstrate that his associates and successors elaborated his internalization hypothesis. His concept of self regulation, which is highly similar to the concept of metacognition, and his vague description of the zone of proximal development induce research by cognitive (educational) psychologists. We illustrate that the social context in which the ideas of Soviet educational psychologists emerged is very important for our understanding of them.

At the moment the most important mainstream approaches in psychology are behaviorism, cognitive psychology, and psychoanalysis. However, during the past two decades, it has become clear that educational psychology is being dominated by the cognitivistic approach. We have yet to describe one other view, which originated in the Soviet Union and was a particular inspiration in the 1970s for many educational researchers, in the Netherlands and elsewhere. In our view, this principle, known as the action-theoretical approach, closely resembles the cognitivistic view. The two should therefore not be seen as diametrically opposed to one another; rather, the action theoretical approach supplements the cognitivistic approach. Nonetheless, the former merits a separate description.

A number of researchers in the Soviet Union have studied the relationship between intellectual development and instruction. We should clarify that they did not take the learning process as their study object, unlike the learning approaches in behavioristic and cognitive psychology.

In the following we will briefly describe this action theoretical view from a learning context. We will begin with a description of the action-theoretical view. Next, to understand what characterized the development of educational psychology in the Soviet Union, we will describe the only philosophical views allowed by the Communist Party. The section that follows describes the points of departure for researchers in educational studies, and, finally, some important ideas of Vygotsky.

## Mental Actions

The essence of the action-theoretical perspective on educational psychology is the idea of action. Action is guided and controlled by consciousness. Both the cognitivistic and the action-theoretical views focus not only on external behaviors--the outcome--but on internal or mental actions as well. The following example will help to demonstrate that different actions can lead to the same outcome. Imagine that we are given the following sum:  $22 \times 24$ . We can calculate the answer by performing at least three different operations: firstly, by calculating  $20 \times 24 = 480$ ,  $2 \times 24 = 48$ ,  $480 + 48 = 528$ ; secondly, by writing out the multiplication with pen and paper; and thirdly, by calculating  $(23-1)(23+1)$ .

The idea has taken root among Soviet educational psychologists that both external activities or behaviors and internal activities or mental operations take the form of actions.

### The only Philosophical Principles Allowed in the Soviet Union

The action-theoretical view of educational psychology has its roots in European philosophy, more particularly in the practice of psychology in the Soviet Union. Between the end of the 1917 Russian Revolution and the Gorbachov era, the only philosophical principles considered acceptable were those of Marxist-Leninist thought, or dialectical materialism. In the following we will list seven principles of Marx and Engels that form the epistemological and philosophical basis of Soviet psychiatry (Wortis 1950), and are thereby applicable as well to practitioners of educational psychology. (a) An objective reality exists quite apart from consciousness, here matter has an independent existence. (b) Consciousness or mind reflects objective reality, which exists independently. (c) objective reality is knowable. (d) Everything is interrelated, in other words, there are no isolated phenomena. (e) Nature is in constant motion, in a continuous process of development and disintegration. (f) Quantitative changes are converted into qualitative changes, leading to higher levels of organization. (g) Each single phenomenon is made up of opposing forces. Not surprisingly, as citizens of a totalitarian state Soviet researchers were forced to ascribe to the philosophical principles mentioned above.

An important principle of dialectical materialism is that both consciousness and conscious human action are socially determined. The vision of humanity held in dialectical materialism and, therefore, by social-behavioral science researchers-including Soviet psychologists-is extraordinarily optimistic. By teaming up with material reality, man can elevate himself to higher planes. We see an almost religious vision of mankind in the work of Trotsky (1879-1940), who offers a "himmelhoch jauchzende" description in which man becomes immeasurably stronger, wiser and more refined, or something to that effect. The body of the new man will be more coordinated, his movements more rhythmic, and his voice notably more musical. Trotsky predicts that the level of the average man will rise to that of an Aristotle, a Goethe or a Marx, and new geniuses will even exceed these heights (sic) (Trotsky, 1969). Trotsky cannot in any case be accused of making unverifiable statements: we are all witnesses to the fact that after more than 70 years in the best of all possible societies, the average Soviet citizen is nowhere near matching the description given above.

Trotsky's vision of mankind is not new, but can be traced back to Lamarck's evolutionary theory (1744-1829), which basically states that acquired characteristics are inheritable and consequently may be passed on to the following generations. This vision was propagated in the Soviet Union until the 1960s, not only in the social-behavioral sciences, but also in fields such as biology. For example, Lysenko (1898-1976), who was supported by important party officials, among them Stalin, exerted a great deal of influence on agriculture. Against all evidence he continued to insist that once traits had been acquired they were also inheritable. A change of environment can lead within a short space of time to a change in the genetic material of a plant. Inferior plants can thus be transformed into superior ones. This conviction too was untenable; even today failed harvests force the Soviet Union to import grain from the West. Lysenko is a splendid example of scientific delusion. In 1965 he was fired as head of the Institute for Genetics in Moscow.

That Soviet educational psychology gained so much attention and influence, particularly in the Netherlands, is in our opinion due to its extraordinarily optimistic vision of human development. The suggestion is that we can achieve a great deal through education. Added to this is a tendency among social scientists to relate human behavior above all to culture, in other words to society in particular, and not to our biological equipment. According to Vroon (1989), this tendency precludes any discussion concerning the structure and function of our brains. Our mental functioning is not seen in direct relation to biology and the central nervous system. Nonetheless, we must realize that the period of existence of western society and culture constitutes no more than one percent of the entire evolutionary history of man. In other words, the biological blueprint covers 99% of our existence as a

species (Barash, 1977). We therefore have good reason to argue that our behavior is the product of both nature and culture.

### The Study of Educational Psychology

It is important to acknowledge that the optimistic vision of mankind described above left a clear mark on, and probably distorted, educational psychology of the pre-Gorbachov era in the Soviet Union. The above-mentioned points of departure led to a research approach to learning that deviates somewhat from the usual (Van Parreren & Carpay, 1972).

In the first place, Soviet educational psychologists believed that true learning involves a transfer of knowledge and skills from society to the growing individual. No earthshaking discovery this, and certainly not a starting point that distinguishes these psychologists from 19th century associationists, behaviorists and cognitivists. Their research consequently focused on the way in which such transfer might be optimized. Studies were carried out in real classrooms, as a rule in experimental schools. We might say that they gave priority to the external or ecological validity (Bronfenbrenner, 1976). Although they may score high in ecological validity with respect to method, something we also observe in the new approach to the study of memory, for example, the question is whether the results can be generalized to a large degree (Banaji & Crowder, 1989). A comment regarding this research approach is in place here. While we were investigating Soviet educational psychology publications, we came across a number of problems. That these publications frequently start out with a panegyric to Lenin did indeed tickle our funny bone, but we were quite prepared to overlook this ritual. More serious was that these publications scarcely ever included an adequate and responsible description of the research procedures. Frequently many important data were missing, making a replication of the studies impossible, a mortal sin for researchers. In general the studies involved a very small number of research subjects. The descriptions of the research procedures were very cryptic. With respect to working out and analyzing the research data, the studies seldom did more than report tallies (Vroon, 1980). All in all this did not leave us with a very good impression of the quality of the research.

In the second place, the approach to learning is more concretely content-oriented. An important starting point is that learning is based on what the student has already learned. This view is also held in cognitive psychology. To accord research its proper place in the field of learning, we must realize that learning is not investigated separately from cognitive development. Close ties exist between research into educational psychology and the study of cognitive development.

In the third place, the mental actions of the students, and not their achievements, have been the object of research. The focus was more on thought structures than on learning processes. In the above we have already shown that learning outcomes-the external effect-can be reached through different actions or operations.

In Eastern Europe in particular there are various contending action-theoretical schools. One of these follows the work of the developmental psychologist Vygotsky (1886-1934). Vygotsky's work has influenced contemporary educational psychology both in the Netherlands and, to a certain extent, in the United States (see for example Brown & Ferrara, 1985). In the section below we will attempt to describe the ideas of this important educational psychologist.

### Vygotsky's Contribution

Vygotsky was the first in the Soviet Union to make the relationship between education and intellectual development the object of research. He and the researchers who followed his example, such as Leontiev and Davydov, emphasize the way in which education influences and changes the

mental actions of a child. They propose that education determines a child's development. For this reason, the essence of education, in their view, must be to teach mental actions and heuristics, and not to teach behavior.

In the following we will present short, separate descriptions of three of Vygotsky's important ideas, namely the sociohistorical theory, the internalization hypothesis and his two stages of development.

### **The Sociohistorical Theory**

In Vygotsky's work we find one recurring theme in particular: what he called the socio- or cultural-historical theory of higher mental functions. By higher mental or psychological functions, he means human forms of activity, such as attention, memory, the exercise of will, etc. (Van Parreren & Carpay, 1972). These higher functions have unfolded throughout the sociohistory of mankind. His opinion concerning higher mental functions is clearly based on the theories of Marx and Engels; even a scholar of Vygotsky's stature could not escape the espousing enforced philosophical principles in his publications. On the other hand, we must also note that, in addition to the influence of Lamarck's evolutionary concepts on official thought in the Soviet Union, biological and psychological theories were equally influenced by the ideas of the philosopher and zoologist Haeckel (1834-1919). Haeckel formulated the recapitulation theory, in which the onto-genesis of an individual is seen as an accelerated repetition of the phylogenesis. This approach is echoed in the work of Piaget in particular, but also in Vygotsky's. For Piaget, the development of human thought is an accelerated film of the history of mankind's thought (Vroon, 1980).

In Vygotsky's view our development is an accelerated repeat of evolution (Vygotsky, 1981). Possibly this opinion brought him into conflict with the Stalin regime. In Vygotsky's work the emphasis is indeed on the social origins of mental functions; hence the name sociohistorical theory. The need to communicate played an essential role in sociohistorical development, according to Vygotsky. He, and Luria (1902-1977), emphasize the role of culture and sets of symbols, for example language, science, books, diagrams, images and other products of art, in a child's intellectual development. The symbols of language are the foremost communication instruments. Man views the social, communicative use of language, and the use of language symbols to influence others, as a means to influence and guide his own behavior. Regulating the behavior of others leads, according to Vygotsky, to self-regulation. The sociocommunicative function of language becomes the self-regulatory function. When an "egocentric" child talks, it is talking to it self the way others talk to it.

According to Vygotsky, the language the child uses is not personal and egocentric, but quite the reverse: it is and is intended to be both social and communicative. Language does undergo a certain development. At first it has a regulative, communicative function. The child that talks to itself regulates and plans its own activities. What is known as egocentric speech serves an intellectual purpose, and rather than disappear around the age of seven, it is internalized, becoming inner speech and verbal thought. Egocentric speech has a direct function, in the opinion of Vygotsky. It crops up when the child is having a difficult time and experiencing problems that it must overcome. Later in the child's development it acquires another function. Language becomes the tool of thought and a system with which to represent the world, but it also becomes an instrument for self-regulation. In effect, egocentric language controls one's own behavior. On this point, Vygotsky's view of the function of language in human development differs from that of Piaget, for example.

The concept "self-regulation" is highly similar to the concept "metacognition" used in cognitive psychology. It is a term describing knowledge about knowledge; for example, the strategy we use to make use of strategies.

## **The Internalization Hypothesis**

In Vygotsky's opinion, the external use of language is replaced little by little by a subvocal use of language, what we call talking to ourselves. Inner speech grows throughout the course of development. The internalization hypothesis, then, concerns the growth of internal, conscious activities out of external forms of behavior. Vygotsky does not argue in the least that mental actions are direct copies or registrations of external activities and nothing more; instead, he proposes that their nature and structure are derived from such activities. External, social activities are gradually internalized by the child.

Some years after Vygotsky developed his theory, a great deal of work in educational psychology in the Soviet Union was based on the internalization hypothesis. For example, Galperin (1902-1988) developed a theory to generate mental actions on the basis of material actions, and worked out a step by step development of mental actions. This theory is a further elaboration of the ideas of Vygotsky and his associates Sankow, Leontiev and Lurian on the genesis of inner processes on the basis of internalization (Landa, 1969). According to Galperin's model, the acquisition of mental actions can be greatly influenced and directed by education. He designed a procedure on this basis consisting of five stages. In his model, instruction involves the successive internalization of control over a learner's actions or activities in order to reach a level of mastery. The stages that a learner must pass through in the teaching-learning process are: (a) the orienting stage; (b) the material stage; (c) the vocalized speech stage; (d) the inner speech stage; and (e) the mental actions stage. The teaching-learning process must be set up in such a way that the learner can complete all five stages (Van Patteren & Carpay, 1972). During instruction, an action or mental activity develops along four dimensions: level of mastery, generalization to other situations, completeness, and familiarity.

## **Two Stages of Development**

Vygotsky observed that children who were unable to complete a learning task independently and in their own way, solve certain problems, retain material, or remember certain experiences often succeeded in these tasks with adult help. Vygotsky emphasizes that the capacity to learn through instruction is a basic trait of human intelligence. He even considers instruction a determining factor in human development. Not surprisingly, then, he develops a description of intelligence quite different from the one we generally use. Vygotsky assumes as it were a natural capacity to learn through instruction. We refer to this as readiness for learning. In this respect, Vygotsky resembles Bruner (see for example his "Toward a theory of instruction," 1966) more than he does Piaget.

Vygotsky and Piaget, who were born in the same year, are probably this century's most important developmental psychologists. Although contemporaries who both lived in Europe, they never met. According to Graham (1972), Vygotsky knew of Piaget's work well before Piaget knew of Vygotsky's. Not until about 1962, when Piaget finally had access to an abridged translation of Vygotsky's *Thought and Language*, which had been published in Russian in 1934, was he able to read Vygotsky's criticism of his work. Vygotsky had few arguments with Piaget's stages of development, but he rejected the underlying genetically determined sequential order. Piaget concludes in general that development precedes learning, whereas in Vygotsky's view it is learning that precedes development. Vygotsky is thus optimistic concerning the possibility of encouraging the development of thought, specifically by having others guide the interaction between a child and its environment. In addition to the functions of language discussed before, the two scholars differed on other points as well. We will not discuss these here, because a comparison of their work is not within the scope of this article.

In this context it is important, however, to describe in brief the stages of development distinguished by Vygotsky. He distinguishes two stages of development: the actual, which is the outcome of prior

development, and the zone of proximal or, as Brown & French, 1979) call it, potential development. It is fairly easy to get an idea of the actual stage of a learner; one method is to issue an achievement test. Much more difficult to measure is the indistinct zone of proximal development. With this term, Vygotsky intended to describe the gap between the actual stage of development and the stage that the child could achieve under the guidance of another. It is the observed difference between what a learner is able to achieve independently and what he or she can achieve with the help of someone more knowledgeable. Vygotsky believes that the entire range of possible cognitive operations or actions available to man is not only a prerequisite for, but also a result of education. In his view, then, it is less important that instruction match the learner's actual stage; rather, the learning tasks should be appropriate for the learner's zone of proximal development. His opinion is that children must continuously push beyond their own limitations and work at a level slightly above their actual stage of development. With reference to this stage it should be noted that, according to Sternberg (1990), the operationalization of the zone of proximal development may not take sufficiently into account individual differences in abilities and styles of learning. In spite of the possible objection that the concept is vague, the study of intelligence may perhaps receive a new impulse by considering what kind of development is likely in the future growth of the child.

The concept "readiness for learning" or educability acquires a new dimension through the introduction of a zone of proximal development. The concern is no longer what a child knows or can do at any given moment, but what it can learn with the help of others. Individual differences are equally present in this vision. Even if two children are in the same developmental stage at a certain point in time, they may still differ in the range of their zones of proximal development. Children whose zones have a wider range are more ready to learn and generally able to learn more through instruction. For Vygotsky, cooperatively achieved success is the essence of learning and development. The most important instrument for the transmission of culture is instruction, not in a formal, but in a wider sense, through more knowledgeable persons, including children in the same age group, brothers and sisters, parents, and, of course, instructors.

Throughout the course of development, children often experience gaps between what they can do without anyone's help and what they can do with the help of more knowledgeable others. An important question in this respect is how to determine whether the instruction is sensitive to the child's zone of proximal development (Wood, 1990). Are we perhaps in danger of taxing the child beyond its potential level of comprehension? or, how can we ensure that education does not underestimate the child's ability? For answers to these questions, we refer the reader to Wood & Middleton, 1978).

An increasing amount of research in the Anglo-Saxon world focuses on the concept self-regulation, particularly the zone of proximal development. We refer for example to Brown & Ferrara (1985), and Brown & French (1979).

### Concluding Remarks

Within educational psychology, the psychology of learning, which aims to map learning processes and optimize them within the context of education, has been given special attention. Nowadays the cognitivist approach dominates educational psychology.

We have described the action-theoretical approach, which originated in the Soviet Union and, in our opinion, supplements the cognitivist approach. The social context in which these ideas emerged, is very important for our understanding of them.

Publications by Soviet educational psychologists who have acquired some reputation in the Netherlands date back to the period in which the Communist Party was in power and Marxism Leninism reigned supreme. Research was done within the Marxist Leninist context, and researchers were forced to ascribe to the philosophical principles of Marxism-Leninism. It is not surprising that the published results of educational psychologists supported Marxist Leninist ideas: to do otherwise would have been to risk a ban on publication or worse. An important tenet in Marxism Leninism is that consciousness and conscious human action are socially or culturally determined. This tenet dominates in the work of Soviet educational psychologists, even in Vygotsky's.

In the Netherlands educational psychologists are oriented toward both American and Russian psychologies of learning. Some claim that the advantage of Russian psychology is that it provides an easier link to education. In the Soviet Union educational psychology studied the relationship between intellectual development and instruction Soviet educational psychologists made ecological validity their priority. We could not escape the impression that the research strategy applied is rather primitive and that the positive results claimed often show some exaggeration. Fairly often the publications are ideologically colored. The philosophical assumptions resulted in a research strategy deviating from the prevailing one. Soviet researchers were also preoccupied with natural settings. The danger of studies that score high on ecological validity is that one may not be able to generalize the results. Nor do the statistical analyses of research data impress us favorably.

The vision of mankind held in the Soviet Union goes back to the evolutionary theory of Lamarck. The optimistic vision of mankind left a clear mark on Soviet psychology in the pre Gorbachov era. The optimism concerning human development through society can probably explain the attention and the influence that Soviet educational psychology had in the past, especially in the Netherlands, and has nowadays in the U.S.A.

We brought the primacy of culture up for discussion and argued that human behavior should be related not only to culture, but also to our biological equipment.

We gave a brief description of three Vygotskian ideas considered important. Vygotsky's sociohistorical theory of higher mental functions shows signs of Marxism-Leninism, but is also influenced by Haeckel's recapitulation theory. We demonstrated that his associates and successors in the Soviet Union elaborated his internalization hypothesis. Vygotsky's concept of the zone of proximal development, whatever that may be, has led to research even in the U.S.A. The problem that researchers face, however, is that Vygotsky's ideas are so abstract that hardly anything serves as a point of departure for further research.

Because Vygotsky published his work under a totalitarian regime, it goes without saying that in view of the philosophical principles that any one publishing was required to endorse including the doctrine which says that mind, in this case-cognition, as well as human cognitive activity, are determined by the society-one should exercise great caution and rate these ideas at their true value by applying adequate research strategies.

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